

ADDITIONAL SHEETS CONTAINING STATEMENTS ESTABLISHING UNINTENTIONAL DELAY

delta T GmbH Kerkrader Strasse 11 D-35394 Gießen

FAX TO: Petitions Department 001 703 872 9306

PATENT APPLICATION NO: 10/022,406 DeltaT GmbH
FILING DATE: 12/20/2001
GROUP ART UNIT: 1743
EXAMINER: Mr Arlen Soderquist
DATE: 05/31/2005

REFERENCE: Petition for the Revival of US Patent Application Form 37 cfr.1.181

Dear Sirs

We received notification today that our patent application has been abandoned due the non payment of fees of \$140 for multiple dependent claims and \$21 for excess claims. Following your request for the payment of these fees we sent you a fax on 11/02/2004 making the full payment of \$161 with your credit card payment form (please see attachment). We did therefore assume that payment had been made especially as the delivery status of our fax confirmed that the fax had been received by yourselves.

Unfortunately for some reason however this payment was not processed by your finance office. We have attached a copy of the delivery status of the fax from which the payment form was sent. Please excuse the fact that we can only provide this along with multiple other faxes that were sent also during that period as this is the only option we have to produce such a report from our computer system. Please also excuse the fact that it is also in German, again for obvious reasons. To explain however, the fax sent to you is 8th from the top sent at 11.25 which can be seen under 'Datum' =Date. Under the 2nd column 'Rufnr/Kennung' = Fax number it was sent to, you will see that it was sent to 703 305 8007. The last 4 columns show a) 'Dauer' = transfer time b) 'S' =Pages c) 'Gebühr' =Charge (in Euros) d) 'Status' =Status (of whether sent or not). You will see from the delivery report of the fax sent to you that 3 pages were sent, at a charge of €1.92, that the delivery was confirmed by 'Versand' =Sent and that the transfer took 7min 24 sec at 11:26 a.m. central European time.

We therefore request that you accept our petition to request the revival of our patent application as we reasonably assumed that our payment had been processed by your finance office.

We will look forward to reply and naturally will authorise another payment as soon as you direct us to do so.

Kind regards

Dirk Nehring

Mark Brannon

Bankverbindung:
Sparkasse Gießen
BLZ: 513 500 25
Kto.-Nr.: 241 023 700

Ust-IdNr.: DE209251853
Steuer Nr.: 020 231 21779
Sitz der Gesellschaft: Gießen HRB 3532
Geschäftsführer: Manfred Zorn, Dirk Nehring

04/10/2006 EFLORES 00000027 10022406

01 FG:2252

225.00 OP

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S. 02/18

APR 06 2006

PTO/SB/64 (10-05)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION FOR REVIVAL OF AN APPLICATION FOR PATENT
ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)**

Docket Number (Optional)

First named inventor: NEHRING, et al.Application No.: 10/022,406Art Unit: 1743Filed: 20 DECEMBER, 2001Examiner: ARLEN SODERQUIST

Title: TRANSPORT SYSTEM FOR PRODUCTS AT
CONSISTENT TEMPERATURES

Attention: Office of Petitions
Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
FAX (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact Petitions
Information at (571) 272-3282.

The above-identified application became abandoned for failure to file a timely and proper reply to a notice or
action by the United States Patent and Trademark Office. The date of abandonment is the day after the expiration
date of the period set for reply in the office notice or action plus an extensions of time actually obtained.

APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION

NOTE: A grantable petition requires the following items:

- (1) Petition fee;
- (2) Reply and/or issue fee;
- (3) Terminal disclaimer with disclaimer fee - required for all utility and plant applications
filed before June 8, 1995; and for all design applications; and
- (4) Statement that the entire delay was unintentional.

1. Petition fee

☒ Small entity-fee \$ 225 (37 CFR 1.17(m)). Applicant claims small entity status. See 37 CFR 1.27.

☐ Other than small entity - fee \$ _____ (37 CFR 1.17(m))

2. Reply and/or fee

A. The reply and/or fee to the above-noted Office action in
the form of PETITION FOR THE REVIVAL (identify type of reply): 37 CFR 1.181

☒ NOTICE OF ABANDONMENT 20 MAR 2005
☒ has been filed previously on _____
☒ is enclosed herewith.

B. The issue fee and publication fee (if applicable) of \$ 1500.

☐ has been paid previously on _____
☒ is enclosed herewith.

[Page 1 of 2]

This collection of information is required by 37 CFR 1.137(b). The information is required to obtain or retain a benefit by the public which is to file (and by the
USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1.0 hour to
complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any
comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer,
U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED
FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

04/10/2006 EELORES 00000028 10022406

01 FC:1453

1500.00-00

PTO/SB/64 (10-05)

Approved for use through 07/31/2006, OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

3. Terminal disclaimer with disclaimer fee

- ☐ Since this utility/plant application was filed on or after June 8, 1995, no terminal disclaimer is required.
- ☐ A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of \$ _____ for a small entity or \$ _____ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(b) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

D. Neuring
Signature

5 APRIL 2006
Date

DIRK NEHRING
Typed or printed name

Registration Number, if applicable

DELTA T GMBH, KERKRADER STR 11
Address

+49/641 4809240
Telephone Number

35394 GIESSEN, GERMANY
Address

Enclosures: ☒ Fee Payment

☒ Reply

☐ Terminal Disclaimer Form

☒ Additional sheets containing statements establishing unintentional delay

☐ Other: _____

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☒ Transmitted by facsimile on the date shown below to the United States Patent and Trademark Office as (571) 273-8300.

5 APRIL 2006
Date

D. Neuring
Signature

5 APRIL 2006

Typed or printed name of person signing certificate

DIRK NEHRING

[Page 2 of 2]

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APR - 6 2006

delta T

Gesellschaft für
Medizintechnik mbH

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Contact Person:

Dirk Nehring

E-Mail: nehring@deltaT.de

Date: 4/05/2006

delta T GmbH Kerkraeder Strasse 11 D-35394 Giessen

United States Patent and Trademark Office
Customer Service Window, Mail Stop
Randolph Building
401 Dulany Street
Alexandria, VA 22314
UNITED STATES of AMERICA

RENEWED PETITION UNDER 37 C.F.R. § 1.137(b)

FAX TO Petitions Department; 001 571 273-8300

PATENT APPLICATION NO: 10/022,406
FILING DATE: 12/20/2001
GROUP ART UNIT: 1743
EXAMINER: Mr Arlen Soderquist
DATE: 04/05/2006

Dear Sirs

We believe that we have correctly filled out all of the necessary forms and enclosed the appropriate payments to revive the above patent application. Our petition was abandoned as it seems that we did not make a timely payment in 2004. We did however fax a payment mandate with our credit card details to your offices on November 2nd 2004, a copy of our faxed sent items is attached herewith, which shows that this was in fact done. Clearly this did go unfortunately amiss, whether due to a technical fault or something that we feel was beyond our control. We naturally assumed due to our fax print out that your offices had received this mandate and that the payment was in fact made in a timely manner. We were not aware that the US Patent Office does not accept such proof. As we are now aware of this, we have sent these documents by courier to ensure your receipt of them. We realise that you must have millions of applications to work on and of course cannot be responsible for the failure of faxed items. Therefore, we would very much appreciate it if you would review our petition for the revival of our patent application given the misfortunate circumstances beyond both of our control.

In order to revive our application we have made the following payment mandates as follows;

- a) Small entity fee as we are below 5 employees \$ 225
- b) Issue fee according to 35u.s.c.41 (a7) \$ 1,500
- c) Open filing fee for the patent application \$ 161

We trust that these payments are correct and that they will secure our petition for revival. We were however unsure about the fees listed under point 3 of the form 37 CFR 1.137(B) as attached with regard to the "Terminal Disclaimer Fee". We understand that this does not apply to our petition, if however it does, could we request that you let us know by email to nehring@deltaT.de or by calling us on +49 641 480 9240 to let us know. We will however follow this petition for revival up ourselves on April 10th 2006.

Thank you in advance for your assistance and we will look forward to hearing from you.

Kind regards

Dirk Nehring

Bankverbindung:
Sparkasse Gießen
BLZ: 513 500 25
Kto.-Nr.: 241 023 700

Ust-IdNr.: DE209251853

Steuer Nr.: 020 231 21779

Sitz der Gesellschaft: Gießen HRB 3532

Geschäftsführer: Manfred Zorn, Dirk Nehring

BEST AVAILABLE COPY

Additional Sheet containing statement establishing unintentional delay:

Since we believe, that the payment according to Application number 10/022,406 was correct the failure to reply timely and properly to the 23 June, 2004, Office action was unintentional. We believed that our first calculation and transfer of the fees by credit card was correct so that the payment of the additional fee, which was claimed in the 23 June, 2004, Office action was delay and finally not processed.

Please refer also to our statement in the first petition.

01.06.2005 12:43

Teledat 150 Fax - Ausgang (Kennung +49 641 480 92 42)

Seite 1

Datum	Rufnr./Kennung	Teilnehmer	Bemerkung	Start	Dauer	S.	Gebühr	Status
Di. 30.11.2004, 15:20:18	06171635200		Lexware Druckausg	15:21:12	00:51	1	0,12	Versandt
Mi. 10.11.2004, 15:18:51	+49 30 48163402		Zuwendung1.pdf	15:19:03	03:55	3	0,84	Versandt
Mi. 10.11.2004, 12:33:56	61 2 9848 1123		Scan	12:34:22	01:15	1	3,12	Versandt
Mi. 10.11.2004, 10:29:18	+49 2953 7241	Radke; Transmed S	z. Hd. Dirk Radke II	10:29:24	00:43	1	0,36	Versandt
Fr. 05.11.2004, 14:50:50	02114560-		Scan	14:51:00	01:37	1	0,48	Versandt
Fr. 05.11.2004, 12:38:36	+49 211 4541948		Möbel S1.pdf	12:36:40	03:18	2	0,72	Versandt
Di. 02.11.2004, 11:45:39	0086 0789 6528433		Microsoft Word - Be	11:46:10	02:12	1	7,20	Versandt
Di. 02.11.2004, 11:25:59	7033058007		Payment 161 dollar	11:26:14	07:24	3	1,92	Versandt
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Do. 28.10.2004, 15:58:18	+49 211 51330509		Scan	15:58:25	01:13	1	0,36	Versandt
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Di. 26.10.2004, 10:42:56	+49 641 3092553		Fuer Roberto	10:43:08	05:52	1	0,48	Versandt
Mo. 25.10.2004, 16:38:23	+49 6402 809929	BTL	Lexware Druckausg	16:38:28	01:10	2	0,12	Versandt
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Mi. 29.09.2004, 17:29:53	+3216385388		Lexware Druckausg			0	0,00	ABGEBROCHEN
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Di. 21.09.2004, 16:35:52	61 2 9848 1123		Lexware Druckausg	16:36:12	00:37	0	0,00	ABGEBROCHEN
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Do. 16.09.2004, 12:39:42	+49 641 9342500		Microsoft Word - An	12:39:55	00:54	1	0,12	Versandt
Di. 14.09.2004, 15:07:12	+49 6027 461450		Lexware Druckausg	15:07:19	00:51	1	0,12	Versandt
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,406	12/20/2001	Dirk Nehring		5065

7590
deltaT GmbH
Kerkraeder Strasse 11
Hessen, 35394
GERMANY

05/20/2005

EXAMINER

SODERQUIST, ARLEN

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 05/20/2005

ENGESAM
AM 31. MAI 2005

Please find below and/or attached an Office communication concerning this application or proceeding.

m

Notice of Abandonment

Application No.

10/022,406

Examiner

Arlen Soderquist

Applicant(s)

NEHRING ET AL.

Art Unit

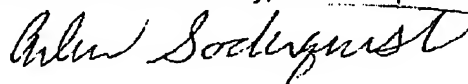
1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 23 June 2004.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☒ A reply was received on 20 September 2004 but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☐ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☒ The reason(s) below:

Applicant has failed to correct the deficiencies noted in the of notice of fee deficiency, mailed September 24, 2004.


ARLEN SODERQUIST
PRIMARY EXAMINER

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

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FAX TO: Mr. Arlen Soderquist
FAX No. 001 703 872 93 06
FROM: Mr Dirk Nehring (total 23 pages)
Application Number: 10/022,406
Applicants: Nehring ET AL
Art Unit: 1743

Dear Mr Soderquist

Thank you for your correspondence regarding the above US patent application and the reasons why it has initially been rejected.

Regarding the disposition of the claims; Claims 1 to 19 have initially been rejected. We have revised these as you correctly pointed out that as originally written, in the most part it seems obvious to one of ordinary skill in the art of the time of the invention, given the previous US Patents cited by you, that the invention could have been arrived at. We have addressed each of these patents as follows;

In U.S. Pat. No. 5,235,819 an apparatus for storing and distributing materials is described.. The apparatus maintains products at an intended temperature during transportation and storage at an ambient temperature deviating from the intended temperature. The invention features a container that holds the products and whose walls render heat transfer difficult. The container includes a main container body with a bottom and a side section that together define one or more integrated compartments suitable for storing a solidifiable substance.

The invention does not consist of modular identical halves or frame structures that may be stacked on top of each other to create a flexible, modular system enabling variable inner volumes to suit different product sizes, thus maximising the inner volume for the amount of product being stored whilst also being completely surrounded by the temperature regulating fluid. The fact that this transport apparatus is not modular makes it impossible to transport variable volumes of products such as medications, blood and organs, which are the intended products to be transported in the system invented by Nehring and Bienert.

An insulated modular cooler comprising in one embodiment a plurality of tubular housing sections and a plurality of tubular hollow-walled insert housing containing a refrigerant in the hollow walls of the insert housings was invented by Basso (4,517,815). The tubular housing sections can be secured end to end to form an elongated tubular housing. However, the tubular system has to have an end cap to secure the product being transported inside, which functions like a thermal bridge so that heat from the outside can be easily conducted into the inner compartment of the tubular housing. There is no cooling fluid within this end cap which

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Since it would be obvious to one of ordinary skill in the art that complete surrounding of the inner compartment enhances the temperature stability of the inside product it is not obvious for one of ordinary skills to combine both features of modularity and the complete surrounding of phase change material and also construct this by avoiding a double walled system without an end cap or bottom cap.

Regarding the application papers the drawings have also been revised to show in more clarity the parts of the invention and their pertinance to it. We have paid particular note to your comment ("It is not clear what structure consitutes a clip"). We have revised this to rename the "clip" as "notches and indentations" as they are notches and indentations moulded into the system (Fig 1 shown as 11 and 2). Furthermore the structure names as "ring" (figure 3; 20) was renamed as "double wall frame".

The certified copies of the prior European Patent 0124070.2 have been requested from the European Patent offices and will be sent to you as soon as we receive them.

We trust that our amendments explain the points you made in full. We are aware that your time is limited, so should you require any further assistance whilst processing our US Patent application, you may contact us by email at info@deltaT.de and we will answer you promptly or call you if you prefer.

Kind regards


Dirk Nehring

<u>5252408</u>	Oct., 1993	Bridges et al.	428/621
<u>5282994</u>	Feb., 1994	Salyer	252/70
<u>5379596</u>	Jan., 1995	Grayson	62/362
<u>5505046</u>	Apr., 1996	Nelson et al.	62/3
<u>5512345</u>	Apr., 1996	Tsutsumi et al.	428/69
<u>5522216</u>	Jun., 1996	Park et al.	62/3
<u>6482332</u>	Mar., 2000	Malach	252/70

Foreign Patent Documents

2232756	GERMANY
100 28 656 A1	GERMANY
198 58 794 A1	GERMANY
198 36 048 A1	GERMANY
100 48 636 A1	GERMANY

Claims

What is claimed is:

1. A system comprising a rectangular double walled container filled with temperature-regulating fluid to maintain consistent temperatures designed to contain store and label perishable goods, such as blood products, antibodies, cells or biologically produced pharmaceuticals comprising:

two identical halves, which may be securely closed together to create a sealed single module, or, may be stacked on top of each other, with or without the addition of complimentary double walled extension frames, both of which create a flexible, modular system enabling variable inner volumes to suit different product sizes, thus maximising the inner volume for the amount of product being stored;

the geometry of the system allows the product being stored or transported to be completely surrounded by the temperature-regulating fluid and each identical half provides temperature regulating properties and acts as a first end cap or bottom end cap.

a modular system allowing the user to determine the inner volume to suit the amount of product to be transported and the volume of the temperature regulating fluid, which in turn determines the period at which the temperature regulating fluid maintains temperature consistency.

15. The system according to claim 2, is thus characterised as the container made from two double walled halves that are fitted with tongues and grooves along the longer sides.
16. The system according to claim 2, is thus characterised as the container made from two double walled halves and a complementary double walled frame that are fitted with tongues and grooves along the longer sides.
17. The system according to claim 2 or 3, is thus characterised as the container made from two double walled halves and/or a complementary double walled frame are attached with a moveable hinge.
18. The system according to claim 2 or 3, is thus characterised as the container has a carrying strap.
19. The system according to claim 2 or 3, is thus characterised as the container made from two or three complementary double walled halves which enclose a space intended to store products is fitted with a thermometer, specifically a self adhesive strip thermometer or a liquid crystal thermometer and/or an electronically readable temperature guage.

The container includes a main container body with a bottom and a side section that together define one or more integrated compartments suitable for storing a solidifiable substance.

The invention does not consist of modular identical halves or frame structures that may be stacked on top of each other to create a flexible, modular system enabling variable inner volumes to suit different product sizes, thus maximising the inner volume for the amount of product being stored whilst also being completely surrounded by the temperature-regulating fluid. The fact that this transport apparatus is not modular makes it impossible to transport variable volumes of products such as medications, blood and organs which are the intended products to be transported in this present invention.

An insulated modular cooler comprising in one embodiment a plurality of tubular housing sections and a plurality of tubular hollow-walled insert housing containing a refrigerant in the hollow walls of the insert housings was invented by Basso (U.S. Pat. No. 4,517,815). The tubular housing sections can be secured end to end to form an elongated tubular housing. However, the tubular system has to incorporate an end cap to secure the product being transported inside, which functions like a thermal bridge so that heat from the outside can be easily conducted into the inner compartment of the tubular housing. There is no cooling fluid within this end cap which means that the cooling fluid does not surround the entire inner compartment. Furthermore, another bottom cap is required to close the system. The temperature stability of the product to be transported is therefore unpredictable because the cooling fluid does not surround the inner compartment completely. The invention does not consist of modular identical halves that may be stacked on top of each other and which require neither an end or bottom cap as is the case in this present invention, whereby the product being transported is totally surrounded by temperature regulating fluid.

A combination dental material mixing slab holder and cooler which includes a base plate having a pair of spaced, upwardly projecting ribs and a central well was invented by Drake (U.S. Pat. No. 3,858,410). This patent teaches that the heat sink means it is a stable liquid or solid material, having a relatively high latent or heat capacity. However, no modular dispositions are explained and the cooling liquid or solid material does not surround the inner compartment completely. The temperature profile through the cross sections is inhomogeneous due to the different conductivity of the lid and the container itself.

Various phase change formulations usable in thermal packaging systems using a single phase change material part in liquid and part in solid form to confine the temperature of the product within a predetermined range was described by Malach (U.S. Pat. No. 6,482,332).

change allowing a maximum transport time to be achieved with predictable temperature values.

Since it would be obvious to one of ordinary skill in the art that complete surrounding of the inner compartment enhances the temperature stability of the inside product is it not obvious for one of ordinary skills to combine both features of modularity and the complete surrounding of phase change material and also construct this by avoiding a double walled system without an end cap or bottom cap.

The purpose of this invention is to provide a transport system for products at consistent and predictable temperatures, specifically blood and medical products, which hinders tampering of single or multiple units and maintains the permitted temperatures. A further purpose of this invention is to show on the container whether the permitted temperatures have been maintained.

The solution is found with a system to transport products at consistent temperatures, specifically the temperature regulated transport of blood and medical products with the properties according to claim 1. And advantageous properties of the invention are described in fully in the claim.

SUMMARY OF THE INVENTION

In accordance with the invention the system, a storage, protection and transport container for easily perishable products, made from double walls that are filled with a fluid or solid latent temperature regulating fluid to give it insulating properties, enables the transport of products at consistent temperatures, especially to transport blood and medical products.

A major property of the invention is that the container, consisting of two identical halves (1) and (10) or frames (20) that close together; snap tightly shut due to a series of notches (11) and indentations (2) along the perimeter of each half or frame. When the two halves are closed together a protective space (3) is created within, which enables the storage of blood and/or pharmaceuticals. The construction of the identical halves allows the product being stored or transported to be completely surrounded by the temperature-regulating fluid. Furthermore, each identical half (1; 10) provides temperature-regulating properties and acts as a first end cap or bottom end cap.

Fig. 4: a perspective outer view of the storage, protection and transport container that consists of the parts of Fig. 1, Fig.2 and Fig. 3 according to the invention.

Fig.5: a perspective view of a single half (1) combined with frames (20) that fit together and form a storage, protection and transport container according to the invention.

Fig 6: two schematic cross sections of two identical halves (1) containing one or two blood product units (30) depending on the addition of a double walled frame (20) to extend the inner volume according to the invention.

Fig. 1: The system to transport products at consistent temperatures consists of two identical halves, shown in Figure 1 and Figure 2. Fig. 1 shows an innerview perspective of one half. This half (1) can be locked together with a second same half (10) by means of notches (11) and indentations (2). The first half locked together with a second half creates an inner space (3), which is completely shielded from the outside elements due to the double walls of the two halves (1 and 10) and the tongues (4) and grooves (5) along the connecting edges (6) of the container. This space (3) allows for the storage of blood products (shown in Fig. 6) or other products such as antibodies, cells or pharmaceuticals in their original packaging.

Fig. 2: The outer view perspective of one half is shown in Fig. 2. The halves (1 and 10) contain a liquid or solid temperature-regulating medium within the double walls and have sealable openings (12) to fill them. The parts have indentations (14) on the outside to fit a carrying strap and protrusions (7) and indentations (8) to enable them to lock snugly together and allow for stacking. With the aid of a sealing tie (not shown) both parts can be sealed together.

Fig. 3: Respective characteristics are marked in Fig.1 and 2. A double walled frame (part 20) fits together with parts 1 and 10 by means of notches (11) and indentations (2) along the connecting edges (6) thus increasing the interior volume.

Fig. 4: Respective parts are marked in Fig.1, 2 and 3. The system used to transport products at consistent temperatures with improved protection and storage is achieved by fitting a half (1) together with a second same half (10) and a frame (20) which fits between both halves by means of notches (11) and indentations (2). The identical halves (1 and 10) are featured with an eyelet (9) on both sides that allows sealing of the whole container.

Fig. 5: Respective parts are marked in Fig.1, 2 and 3. The inner volume (3) can be increased by stacking a single or chosen multiples of frames (20) to create a modular system, whereby